January 27, 1916.

RS, Pi,
Insect control.

Primary and Secondary Bark Borers,
killing Yellow, Sugar and Jeffrey Pine.

The attached tables for 1915 complete the work covering a period of three years (1913-14-15) conducted on Insect Control Projects. While the data does not include all the threes worked, it does include all the authentic data and only authentic data.

Any great variation in average percent of trees killed by any species during one year can always be accounted for by some special epidemic of a bark borer not usually of first importance in epidemics affecting that species of tree. Attention is called to the several species, secondary on many trees, which also appear as primary. These species, where secondary, are generally found breeding in the tops and limbs.

For the first time particular attention has been paid to windfalls and those infested have been worked. They have all been yellow pines containing Dendroctonus brevicomis, Ips confusus and Melanophila gentilis, three of the most important killers.

Ralph Hopping.
National Forest Examiner.

Copies sent
Sierra
Trinity
Stanislaus.

(1915)

TRINITY

(Hayfork Project)

YELLOW PINES:

	No.trees.
Dendroctonus brevicomis	174
" " & D. valens	94
" " " D. monticolae	19
" " " Melanophila gentilis	7
" " " Ips confusus	29
" " " D.valens & D.monticolae	11
" " " " " " Melanophila gentilis	5
" " " monticolae & " "	6
" " " valens & Ips confusus	17
" " Ips confusus & M. gentilis	2
" " " " " D. monticolae	4
" " D.valens,D.monticolae & M.gentilis	2
" " " " " " " I.confusus	1
" " " " M. gentilis " " "	2
" " " " D.monticolae,I.confusus, and I.emarginatus,	1
" " & Ips emarginatus	1
Dendroctonus monticolae	1
" " & D. valens	5
" " " Ips confusus	1
" " " Melanophila gentilis	1
" " D.brevicomis & Ips confusus	3
Melanophila gentilis	21
" " & D. brevicomis	3
" " " D. valens	1
" " " D. monticolae	1
" " D.brevicomis & Ips confusus	1
Ips confusus	40
" " & D. valens,	9
" " " D. brevicomis	1
" " " M. gentilis	1
" " D. valens & D. brevicomis	2
" emarginatus, Ips confusus & D.brevicomis	1
Mistletoe	1
	468

SUGAR PINES:

Dendroctonus monticolae	49
" " & D. valens	8
" " & Ips confusus	1
" " & Melanophila gentilis	3
	61

JEFFREY PINES:	No. Trees
Ips confusus	2
" " & Melanophila gentilis	1
Melanophila gentilis	5
" " & Dendroctonus valens	1
	9

SIERRA (1915)

(Chiquito Project).

YELLOW PINES:	No. Trees
Dendroctonus breviocomis	209
" " & D. monticolae	18
" " " " jeffreyi	1
" " " " valens	10
" " " Ips confusus	4
" " " " emarginatus	3
" " " Melanophila gentilis	2
" " D.monticolae & D. valens	1
" " " jeffreyi & Ips emarginatus	1
" " " monticolae & Ips confusus	1
" " & Melanophila gentilis	1
Dendroctonus monticolae	20
" " & breviocomis	2
" " " D.valens	1
" " " Ips confusus	2
Dendroctonus valens	1
" " & Melanophila gentilis	1
" " D. monticolae & Ips confusus	1
Ips confusus	11
Melanophila gentilis	5
Windfalls	9
Unknown	2
	306

SUGAR PINES:	
Dendroctonus monticolae	83
" " & D. valens	3
Ips confusus	4
" emarginatus	1
Mistletoe	2
	93

JEFFREY PINES:	
Dendroctonus jeffreyi	19
" " & Melanophila gentilis	5
Dendroctonus valens " " "	3
Melanophila gentilis	8
Ips emarginatus	1
" " & D. jeffreyi	2
	38

(1915)

STANISLAUS

(Bullock Project)

YELLOW PINES:	No. trees
Dendroctonus brevicomis	42
" monticolae	19
	61

SUGAR PINES:	
Dendroctonus monticolae	74

In this area, where the sugar pine is at least 50% of the entire stand, infestation in yellow pine from the attacks of Dendroctonus monticolae is 19 trees out of a total of 61 or over 31%. This is the largest percentage we have ever had from infestation by this species of bark borer and goes far to prove that yellow pines in California are seldom attacked by Dendroctonus monticolae unless in close proximity to sugar pine infestations. In the Hayfork Project where the infested sugar pines were 61 to 468 yellow pines, D. monticolae killed only 11 yellow pines; in the Chiquito Project, where the infested sugar pines numbered 93 to 306 yellow pines, D. monticolae killed 25 yellow pines, while on the Bullock Project where the infested sugar pines were 74 to only 61 yellow pines, D. monticolae killed 19 yellow pines. Expressed in percentages the number of yellow pines killed by D. monticolae were as 2 - 8 and 31% of the total number.

S U M M A R Y

(1915)

YELLOW PINES :

Trinity (Hayfork Project) - - - - - - - - - -	468	trees
Sierra (Chiquito Project)- - - - - - - - - -	306	"
Stanislaus (Bullock Project) - - - - - - - -	61	"
	835	"

SUGAR PINES :

Trinity (Hayfork Project) - - - - - - - - - -	61	"
Sierra (Chiquito Project) - - - - - - - - - -	93	"
Stanislaus (Bullock Project) - - - - - - - -	74	"
	228	"

JEFFREY PINES:

Trinity (Hayfork Project) - - - - - - - - - -	9	"
Sierra (Chiquito Project) - - - - - - - - - -	38	"
	47	"

No. of trees killed by each Primary Borer:

Yellow Pines:

Dendroctonus brevicomis - - - - - - - - - - -	668	"
" monticolae - - - - - - - - - - -	55	"
" valens - - - - - - - - - - - - -	3	"
Ips confusus - - - - - - - - - - - - - - - - -	64	"
Melanophila gentilis - - - - - - - - - - - -	32	"
Ips emarginatus - - - - - - - - - - - - - - -	1	"
Mistletoe - - - - - - - - - - - - - - - - - -	1	"
Windfalls - - - - - - - - - - - - - - - - - -	9	"
Unknown - - - - - - - - - - - - - - - - - - -	2	"
	835	"

Sugar Pines:

Dendroctonus monticolae - - - - - - - - - -	221	"
Ips confusus- - - - - - - - - - - - - - - - -	4	"
" emarginatus - - - - - - - - - - - - - - -	1	"
Mistletoe - - - - - - - - - - - - - - - - - -	2	"
	228	"

Jeffrey Pines;

Dendroctonus jeffreyi - - - - - - - - - - -	24	"
" valens - - - - - - - - - - - -	3	"
Melanophila gentilis - - - - - - - - - - - -	14	"
Ips confusus - - - - - - - - - - - - - - - -	3	"
" emarginatus - - - - - - - - - - - - - - -	3	"
	47	"

Percentage of Trees killed by each Primary Insect:

Yellow Pines:

	(Percent)
Dendroctonus brevicomis	80.0
" monticolae	6.6
" valens	.4
Ips confusus	7.7
Melanophila gentilis	3.8
Ips emarginatus	.1
Mistletoe	.1
Windfalls	1.1
Unknown	.2

Sugar Pines:

Dendroctonus monticolae	96.9
Ips confusus	1.8
" emarginatus	.4
Mistletoe	.9

Jeffrey Pines:

Dendroctonus jeffreyi	51.1
" valens	6.4
Melanophila gentilis	29.7
Ips confusus	6.4
" emarginatus	6.4